

CLAIMS

The invention claimed is:

- 5 1. A signaling network switch comprising:
a network interface for coupling to a network; and
a processor coupled with the network interface, wherein the processor is
adapted to
establish a first connection through a network;
10 establish a second connection;
receive audio content through the second connection;
transmit through the first connection data packets that contain an encoded
form of the audio content;
analyze the audio content; and
15 if a periodic signal is detected in the audio content, transmit through the first
connection a warning signal.
2. The signaling network switch of claim 1, wherein
analyzing the audio content is performed by looking ahead.
- 20 3. The signaling network switch of claim 1, wherein
the periodic signal has a double periodicity.
4. The signaling network switch of claim 1, wherein
25 the warning signal is in-band.
5. The signaling network switch of claim 1, wherein
the warning signal is out of band.
- 30 6. The signaling network switch of claim 5, wherein
the warning signal is a named signaling event.
7. The signaling network switch of claim 1, the processor is further adapted to:
determine an ending of the periodic signal; and

transmit a clear signal corresponding to the ending.

- 8 The signaling network switch of claim 1, the processor is further adapted to:
determine a duration of the periodic signal; and
5 encode the duration in the warning signal.

9. A signaling network call manager comprising:
a network interface for coupling to a network; and
a processor coupled with the network interface, wherein the processor is
10 adapted to

establish a first network call manager connection with a first device;
establish a second network call manager connection with a second device;
assist the first device establish a communication connection with the second
device through a packet network;
15 generate one of a first periodic signal and an instruction for a second periodic
signal to be played by one of the first and second devices;
encode a time duration of one of the first periodic signal and the second
periodic signal in a warning signal;
transmit the warning signal through one of the first and second connections;
20 and
transmit the generated one of the first periodic signal and the instruction
through one of the first and second connections.

10. The manager of claim 9, wherein
25 one of the first and second periodic signals has a double periodicity.

11. The manager of claim 9, the processor is further adapted to:
identify a type of one of the first periodic signal and the second periodic
signal; and
30 determine the time duration from the identified type.

12. A telephone comprising:
a detector for detecting a warning signal from data packets and outputting a
disable signal in response to the warning signal;

a decoder for decoding the data packets to output an incoming audio signal;
a speaker for playing out the incoming audio signal;
a microphone for converting sound into an outgoing audio signal;
an acoustic echo canceller for adapting to an aspect of the outgoing audio
5 signal that is generated from converting sound played out by the speaker, and for
generating a canceling signal in response to the aspect, wherein the acoustic echo
canceller discontinues adapting responsive to the disable signal; and
an encoder for encoding the outgoing audio signal and the canceling signal.

10 13. The telephone of claim 12, wherein
the detector is adapted to detect a clear signal and discontinue the disable
signal responsive to the clear signal.

14. The telephone of claim 12, wherein
15 the detector is adapted to determine a time duration from the warning signal,
and discontinue the disable signal after the time duration.

15. The telephone of claim 12, wherein
the warning signal is in-band.

20 16. The telephone of claim 12, wherein
the warning signal is out of band.

17. The telephone of claim 16, wherein
25 the warning signal is a named signaling event.

18. A device comprising:
means for establishing a first connection through a network and a second
connection;
30 means for receiving audio content through the second connection;
means for transmitting through the first connection data packets that contain
an encoded form of the audio content;
means for analyzing the audio content; and

means for transmitting through the first connection a warning signal if a periodic signal is detected in the audio content.

19. The device of claim 18, wherein

5 the means for analyzing the audio content is adapted to look ahead.

20. The device of claim 18, wherein

the periodic signal has a double periodicity.

10 21. The device of claim 18, wherein

the warning signal is in-band.

22. The device of claim 18, wherein

the warning signal is out of band.

15 23. The device of claim 22, wherein

the warning signal is a named signaling event.

24. The device of claim 18, further comprising:

20 means for determining an ending of the periodic signal; and

means for transmitting a clear signal corresponding to the ending.

25. The device of claim 18, further comprising:

25 means for determining a duration of the periodic signal; and

means for encoding the duration in the warning signal.

26. A device comprising:

means for establishing a first network call manager connection with a first device;

30 means for establishing a second network call manager connection with a second device;

means for assisting the first device establish a communication connection with the second device through a packet switched network;

means for generating one of a first periodic signal and an instruction for a second periodic signal to be played by one of the first and second devices;

means for encoding a time duration of one of the first periodic signal and the second periodic signal in a warning signal;

5 means for transmitting the warning signal through one of the first and second connections; and

means for transmitting the generated one of the first periodic signal and the instruction through one of the first and second connections.

10 27. The device of claim 26, wherein
one of the first and second periodic signals has a double periodicity.

28. The device of claim 26, further comprising:
means for identifying a type of one of the first periodic signal and the second
15 periodic signal; and
means for determining the time duration from the identified type.

29. A device comprising:
detector means for detecting a warning signal from data packets and
20 outputting a disable signal responsive to the warning signal;
decoder means for decoding the data packets to output an incoming audio signal;
speaker means for playing out the incoming audio signal;
microphone means for converting sound into an outgoing audio signal;
25 acoustic echo canceller means for adapting to an aspect of the outgoing audio signal that is generated from converting sound played out by the speaker, and for generating a canceling signal in response to the aspect, wherein the acoustic echo canceller discontinues adapting responsive to the disable signal; and
encoder means for encoding the outgoing audio signal and the canceling
30 signal.

30. The device of claim 29, wherein
the detector means is adapted to detect a clear signal and discontinue the disable signal responsive to the clear signal.

32. An article comprising: a storage medium, said storage medium having stored thereon instructions, that, when executed by at least one device, result in:

- establishing a first connection through a network;
- establishing a second connection;
- receiving audio content through the second connection;
- transmitting through the first connection data packets that contain an encoded form of the audio content;
- analyzing the audio content; and
- if a periodic signal is detected in the audio content, transmitting through the first connection a warning signal.

33. The article of claim 32, wherein
analyzing the audio content is performed by looking ahead.

34. The article of claim 32, wherein the instructions further result in:
determining an ending of the periodic signal; and
transmitting a clear signal corresponding to the ending.

35. The article of claim 32, wherein the instructions further result in:
determining a duration of the periodic signal; and
encoding the duration in the warning signal.

36. An article comprising: a storage medium, said storage medium having stored thereon instructions, that, when executed by at least one device, result in:

- establishing a first network call manager connection with a first device;
- establishing a second network call manager connection with a second device;
- assisting the first device establish a communication connection with the second device through a packet switched network;

generating one of a first periodic signal and an instruction for a second periodic signal to be played by one of the first and second devices;

encoding a time duration of one of the first periodic signal and the second periodic signal in a warning signal;

5 transmitting the warning signal through one of the first and second connections; and

transmitting the generated one of the first periodic signal and the instruction through one of the first and second connections.

10 37. The article of claim 36, wherein one of the first and second periodic signals has a double periodicity.

38. The article of claim 36, wherein the instructions further result in:
15 identifying a type of one of the first periodic signal and the second periodic signal; and
determining the time duration from the identified type.

39. An article comprising: a storage medium, said storage medium having stored thereon instructions, that, when executed by at least one device, result in:
20 establishing a communication connection with a device in a packet switched network;
receiving through the communication connection data packets that contain encoded audio;
receiving a warning signal that a periodic tone is encoded in the audio; and
25 disabling an adaptive acoustic echo canceller in response to the warning signal.

40. The article of claim 39, wherein the instructions further result in:
receiving a clear signal; and
30 re-enabling the adaptive acoustic echo canceller in response to the clear signal.

41. The article of claim 39, wherein the instructions further result in:
determining from the warning signal a time duration;
waiting for the time duration; and

then re-enabling the adaptive acoustic echo canceller.

42. The article of claim 39, wherein
the warning signal is in-band.

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43. The article of claim 39, wherein
the warning signal is out of band.

44. The article of claim 43, wherein
the warning signal is a named signaling event.

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45. A method comprising:
establishing a first connection through a network;
establishing a second connection;
receiving audio content through the second connection;
transmitting through the first connection data packets that contain an encoded
form of the audio content;
analyzing the audio content; and
if a periodic signal is detected in the audio content, transmitting through the
first connection a warning signal.

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46. The method of claim 45, wherein
analyzing the audio content is performed by looking ahead.

47. The method of claim 45, wherein
the periodic signal has a double periodicity.

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48. The method of claim 45, wherein
the warning signal is in-band.

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49. The method of claim 45, wherein
the warning signal is out of band.

50. The method of claim 49, wherein

the warning signal is a named signaling event.

51. The method of claim 45, further comprising:
determining an ending of the periodic signal; and
5 transmitting a clear signal corresponding to the ending.

52. The method of claim 45, further comprising:
determining a duration of the periodic signal; and
encoding the duration in the warning signal.

10 53. A method comprising:
establishing a first network call manager connection with a first device;
establishing a second network call manager connection with a second device;
assisting the first device establish a communication connection with the
15 second device through a packet switched network;
generating one of a first periodic signal and an instruction for a second
periodic signal to be played by one of the first and second devices;
encoding a time duration of one of the first periodic signal and the second
periodic signal in a warning signal;
20 transmitting the warning signal through one of the first and second
connections; and
transmitting the generated one of the first periodic signal and the instruction
through one of the first and second connections.

25 54. The method of claim 53, wherein
one of the first and second periodic signals has a double periodicity.

55. The method of claim 53, further comprising:
identifying a type of one of the first periodic signal and the second periodic
30 signal; and
determining the time duration from the identified type.

56. A method comprising:

establishing a communication connection with a device in a packet switched network;

receiving through the communication connection data packets that contain encoded audio;

5 receiving a warning signal that a periodic tone is encoded in the audio; and
disabling an adaptive acoustic echo canceller in response to the warning signal.

10 57. The method of claim 56, further comprising:
receiving a clear signal; and
re-enabling the adaptive acoustic echo canceller in response to the clear signal.

15 58. The method of claim 56, further comprising:
determining from the warning signal a time duration;
waiting for the time duration; and
then re-enabling the adaptive acoustic echo canceller.

20 59. The method of claim 56, wherein
the periodic signal has a double periodicity.

60. The method of claim 56, wherein
the warning signal is in-band.

25 61. The method of claim 56, wherein
the warning signal is out of band.

62. The method of claim 61, wherein
the warning signal is a named signaling event.

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